Springboard DSC Program

Capstone Project 2 Proposal

Impact of the visual attention span

Screening for Dyslexia Using Eye Tracking During Reading

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Problem

Screening for Dyslexia Using Eye Tracking During Reading

Who is your client and why do they care about this problem? In other words, what will your client do or decide based on your analysis that they would not have done otherwise?

 A huge amount of data has shown that eye movements are abnormal in dyslexia. Dyslexic individuals exhibit longer duration of fixations, shorter saccades and thus more fixations in reading than normally developing readers of the same chronological age. Our purpose will be here to show evidence for a visual attention span dysfunction as a potential source of eye movement disorders in developmental dyslexia.

What data are you using? How will you acquire the data?

The datasets available from

https://figshare.com/collections/Screening_for_Dyslexia_Using_Eye_Tracking_During_Reading/3521379/1, contain eye movement disorders report. I used a freely available patient dataset from the Karolinska Institute, Sweden (Benfato, et al). The Karolinska Institute is Sweden's forefront academic and medical institution; the dataset consisted of eye movement recordings from 185 children ages 8 and 9 (since recordings for both the left and right eye were extracted from each child, the dataset contained 370 samples).

Briefly outline how you will solve this problem. Your approach may change later, but this is a good first step to get you thinking about a method and solution.

The raw eye movement position coordinates were first translated into eye movement events like fixations, saccades etc. This can be achieved by essentially any eye movement identification algorithm.

 The objective is to identify the appropriate model. The model could be trained using the data available. Once the model is trained, we can use it to predict future model given the context.

What are your deliverables?

 All Jypyter notebooks that will be developed

 A required Final Report

 A required presentation slide deck